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Method for Purifying Cholera Toxin

This invention provides an improved affinity purification method for cholera toxin using a matrix. The matrix may contain an immobilized form of the Ni^{+2}, Co^{+2}, Cd^{+2} or Zn^{+2} ion that binds to the cholera toxin. The matrix may be used to separate the cholera toxin (CT) components, a toxigenic subunit A (CTA) and subunit B (CTB), when the linkage between the two subunits has been broken. It does not bind the closely related heat-labile enterotoxins (LT) of *Escherichia coli*, and can be used as a method of segregating CT and LT. The method involves applying a composition containing the CT subunits to a matrix, retaining the eluate containing the CTB on the matrix, removing the unbound material from the matrix, and eluting the CTB from the matrix.

Cholera infections caused by *Vibrio cholerae* remain a significant public health problem in developing countries. CTB mediates binding of CTA to the surface of eukaryotic cells via interaction with the monosialoganglioside GM1. An affinity method has previously been described for CT which employs the GM1 oligosaccharide as the ligand, but it is not commercially available. Another method has been described based on the affinity of CT and LT for D-galactose. This method is an improvement as it provides better purification of cholera toxin.

Features and advantages:

- **Matrix only binds the CTB subunit**
- **CTB subunit is easily eluted from the matrix**
- **Does not bind the related heat-labile *E. coli* enterotoxin**

Patent Status

and CTB subunit toxins could potentially be administered mucosally to provide protection from morbidity resulting from cholera exposure. Additionally, the subunit toxins could potentially be administered as vaccines.

Patent No.: 6,008,329 **Available from:** www.uspto.gov
Issued: December 28, 1999 **Docket No.:** RIID 96-05

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KEYWORDS: Cholera toxin; purification; heat labile enterotoxin; Ni; vaccines

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